



02/27/97

FWC

69652 U.S. PTO  
08807737

02/27/97

Docket: 0756-1638

Date: February 27, 1997

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

REQUEST FOR FILE WRAPPER CONTINUING APPLICATION  
UNDER 37 CFR 1.62

Honorable Assistant Commissioner for Patents  
Box FWC  
Washington, D.C. 20231

Sir:

This is a Request for filing a

[ X ] Continuation [ ] Divisional

under 37 CFR 1.62 of prior pending application

Serial No. 08/479,211

Art Unit: 1104

Filed: June 7, 1995

Examiner: L. Radomsky

Entitled: METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE

by the following named inventors:

Hisashi OHTANI, Akiharu MIYANAGAHongyong ZHANGNaoaki YAMAGUCHI

The above identified prior application in which no payment of the issue fee, abandonment of, or termination of proceedings has occurred, is hereby expressly abandoned as of the filing date of this new application. Please use all the contents of the prior application file wrapper, including the drawings, as the basic papers for the new application. (Note: 37 CFR 1.60 may be used for applications where the prior application is not to be abandoned.)

08807737

NOT TO GO OUT

1. ☒ To the best of information and belief, the current correspondence address of the inventor(s) is as set forth in the Declaration filed in the parent application.
2. ☐ Enter the amendment previously filed in the prior application on \_\_\_\_\_ under 37 CFR 1.116, but unentered.
3. ☒ A preliminary amendment is attached.
4. The filing fee is calculated on the basis of the claims existing in the prior application as amended at 2 and 3 above.

For:	No. Filed		No. Extra	Rate Sm/Lg Entity	Fee
Basic Fee				\$385/770	\$770.00
Total Claims	15	- 20	0	x 11/22	
Independent Claims	3	- 3	0	x 40/80	
First presentation of multiple dependent claims \$130/260					
Total					\$770.00

5. ☒ Amend the specification by inserting before the first line, the sentence:  
--This application is a Continuation of Serial No. 08/479,211, filed June 7, 1995, now abandoned; which itself is a continuation-in-part of Serial No. 08/391,580, filed February 21, 1995.--
6. ☒ A check in the amount of \$1,160.00 is enclosed.  
Includes two month extension of time fee.
7. ☐ The small entity status established in the parent application continues to be applicable and such small entity status is hereby requested for the present application.


8. [ X ] Priority is claimed under 35 USC 119 based on foreign application(s)  
No.(s) 6-51237  
Filed in (country) Japan  
On (date): February 23, 1994  
[ ] Certified copy (copies) attached.  
[ X ] Certified copy (copies) filed on February 21, 1995 in prior  
United States Serial No. 08/391,580 filed on February 21,  
1995.
9. [ X ] The prior application is assigned of record to Semiconductor Energy  
Laboratory Co., Ltd.
10. [ X ] The power of attorney in the prior application is to:
- |                         |                 |
|-------------------------|-----------------|
| Daniel W. Sixbey        | Reg. No. 20,932 |
| Stuart J. Friedman      | Reg. No. 24,312 |
| Charles M. Leedom, Jr.  | Reg. No. 26,477 |
| Gerald J. Ferguson, Jr. | Reg. No. 23,016 |
| David S. Safran         | Reg. No. 27,997 |
| Thomas W. Cole          | Reg. No. 28,290 |
12. [ X ] The Commissioner is hereby authorized to charge fees under 37 CFR  
1.16 and 1.17 (except the issue fee) which may be required now or  
hereafter, or credit any overpayment, to Deposit Account No. 19-2380.  
A duplicate of this form is attached.
13. [ X ] It is hereby petitioned under 37 CFR 1.136 that the response term in  
the prior pending application be extended, if necessary, to a date  
which includes the filing date of the present application, and the  
Commissioner is hereby authorized to charge any necessary extension  
fee to Deposit Account No. 19-2380. The prior pending application  
is hereby expressly abandoned upon the award of a filing date to this  
application.

14. [ X ] Also enclosed:  
Petition for Extension of Time

Address all future correspondence to:

SIXBEY, FRIEDMAN, LEEDOM & FERGUSON, P.C.  
2010 Corporate Ridge, Suite 600  
McLean, Virginia 22102  
(703) 790-9110

Respectfully submitted,

  
\_\_\_\_\_  
Jeffrey L. Costellia  
Registration No. 35,483

Sixbey, Friedman, Leedom & Ferguson, P.C.  
2010 Corporate Ridge, Suite 600  
McLean, Virginia 22102  
(703) 790-9110

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Hongyong ZHANG

Naoaki YAMAGUCHI

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6/23/94 14:08:30

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SIXBEY, FRIEDMAN, LEEDOM & FERGUSON, P.C.  
2010 Corporate Ridge, Suite 600  
McLean, Virginia 22102  
(703) 790-9110

Respectfully submitted,

  
Jeffrey L. Costellia  
Registration No. 35,483

**Sixbey, Friedman, Leedom & Ferguson, P.C.**  
**2010 Corporate Ridge, Suite 600**  
**McLean, Virginia 22102**  
**(703) 790-9110**



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Continuation Application of )  
Hisashi OHTANI et al. )  
Based On Serial No. 08/479,211 ) Art Unit: 1104  
Which Was Filed: June 7, 1995 ) Examiner: L. Radomsky  
For: METHOD FOR )  
MANUFACTURING )  
SEMICONDUCTOR DEVICE ) Date: February 27, 1997

SUBMISSION OF RELATED APPLICATIONS

Honorable Assistant Commissioner for Patents

Washington, D.C. 20231

Sir:

Pursuant to Applicant's duty of candor under 37 C.F.R. §1.56, Applicant wishes to inform the Examiner of the following applications directed to related technical subject matter:

<u>Serial No.</u>	<u>Filing Date</u>	<u>Title</u>
08/258,210	June 10, 1994	SEMICONDUCTOR DEVICE AND METHOD FOR MANUFACTURING THE SAME

Respectfully submitted,

  
\_\_\_\_\_  
Jeffrey L. Costellia  
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In re Continuation Application of )  
Hisashi OHTANI et al. )  
Based On Serial No. 08/479,211 ) Art Unit: 1104  
Which Was Filed: June 7, 1995 ) Examiner: L. Radomsky  
For: METHOD FOR )  
MANUFACTURING )  
SEMICONDUCTOR DEVICE ) Date: February 27, 1997

PRELIMINARY AMENDMENT

Honorable Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

Please preliminarily amend the subject application as follows:

IN THE CLAIMS:

Please cancel claims 1-18 without prejudice.

Please add new claims 19-33 as follows:

--19. A method of manufacturing a semiconductor device comprising

the steps of:

depositing a semiconductor film comprising amorphous silicon on an insulating surface;

disposing a catalyst metal in contact with said semiconductor film, said catalyst metal being capable of promoting crystallization of said amorphous silicon;

heating said semiconductor film and said catalyst metal to crystallize said semiconductor film; and then

annealing said semiconductor film by utilizing a light from a lamp to improve the crystallinity thereof,

wherein said annealing is carried out in such a manner that a temperature of a monitored single crystal silicon wafer is raised at a rate of 50 to 200°C/s and then cooled at a rate of 20 to 100°C/s.

20. A method according to claim 19 wherein said lamp is a halogen lamp.

21. A method according to claim 19 wherein said light is an infrared light.

22. A method according to claim 19 wherein said light has wavelengths from 0.6  $\mu\text{m}$  to 4  $\mu\text{m}$ .

23. A method according to claim 19 wherein said catalyst metal is selected from the group consisting of nickel, palladium, platinum, copper, silver, gold, indium, tin, phosphorous, arsenic and antimony.

24. A method of manufacturing a semiconductor device comprising the steps of:

depositing a semiconductor film comprising amorphous silicon on an insulating surface;

disposing a catalyst metal in contact with only a selected portion of said semiconductor film, said catalyst metal being capable of promoting crystallization of said amorphous silicon;

heating said semiconductor film and said catalyst metal to crystallize said semiconductor film wherein crystals grow through said semiconductor film in a horizontal direction with respect to said insulating surface in a region adjacent to said selected portion; and then

annealing said semiconductor film by utilizing a light from a lamp to improve the crystallinity thereof,

wherein said annealing is carried out in such a manner that a temperature of a monitored single crystal silicon wafer is raised at a rate of 50 to 200°C/s and then cooled at a rate of 20 to 100°C/s.

25. A method according to claim 24 wherein said lamp is a halogen lamp.

26. A method according to claim 24 wherein said light is an infrared light.

27. A method according to claim 24 wherein said light has wavelengths from 0.6  $\mu\text{m}$  to 4  $\mu\text{m}$ .

28. A method according to claim 24 wherein said catalyst metal is selected from the group consisting of nickel, palladium, platinum, copper, silver, gold, indium, tin, phosphorous, arsenic and antimony.

29. A method of manufacturing a semiconductor device comprising the steps of:

depositing a semiconductor film comprising amorphous silicon on an insulating surface;

disposing a catalyst metal in contact with said semiconductor film, said catalyst metal being capable of promoting crystallization of said amorphous silicon;

heating said semiconductor film and said catalyst metal to crystallize said semiconductor film,

wherein the step of heating is carried out so that the crystallized semiconductor film has a non (111) plane orientation.

30. A method according to claim 29 wherein said catalyst metal is selected from the group consisting of nickel, palladium, platinum, copper, silver, gold, indium, tin, phosphorous, arsenic and antimony.

31. A method according to claim 29 further comprising a step of annealing said semiconductor film by utilizing a light from a lamp to improve the crystallinity thereof after the step of heating.

32. A method according to claim 29 wherein said annealing is carried out in such a manner that a temperature of a monitoring single crystal silicon

wafer is raised at a rate of 50 to 200°C/s and then cooled at a rate of 20 to 100°C/s.

33. A method according to claim 29 wherein said semiconductor film is crystallized by said heating while said semiconductor film is in contact with a silicon nitride film.--

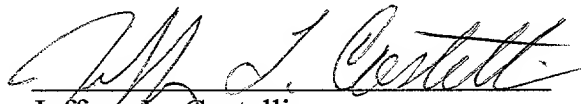
REMARKS

Claims 1-18 are cancelled herein and new claims 19-33 are added.

New claims 19-33 are directed to a different aspect of the present invention. The claimed annealed conditions, namely, the rates of heating and cooling, are disclosed in page 18 of the original application. Also, the non (111) plane feature as recited in claim 29 is supported by the original specification at line 25 of page 25, for example. These features are not disclosed or suggested in any of the cited references.

Examination on the merits is requested.

Respectfully submitted,

  
Jeffrey L. Costellia  
Registration No. 35,483

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